

Severe local hail and wind storms, September, 1926—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks	Authority
Adair County, Iowa	8	2.45 a. m.			\$20,000	Wind	Crops and buildings damaged	Official U. S. Weather Bureau
Hancock County, Iowa	9	11.30 p. m.				Wind	Light and power lines damaged	Do.
Vilas, Wis.	11	11 a. m.	1,700		4,000	Heavy hail	Character of damage not reported	Do.
Russell County, Kans.	11	6 p. m.			450	Violent wind	Damage chiefly to farm buildings and livestock	Do.
Manti, Utah	11				6,000	Hail	Damage principally to windows, awnings, and autos.	Do.
Dodge City, Kans. (near)	14	6.30 p. m.				Tornado	No damage reported	Do.
Dodge City, Kans.	14	7.15 p. m.			500	do.	No damage by tornado but some injury to telephone and power lines and buildings by accompanying high wind.	Do.
Cameron, Mo., and vicinity	14	11.30 p. m.			5,000	Wind and rain	Trees broken, buildings damaged and light service suspended.	Do.
Florida (southern and western part) southern Alabama and Mississippi and eastern coast of Louisiana.	18-22			243		Tropical hurricane.	Details of this storm will appear in the October Review.	Do.
Bancroft, Wis.	21	5 a. m.	5 mi.			Heavy hail	Slight damage as all crops had been harvested	Do.
Cranwood, Wis.	21	P. m.	5 mi.		18,000	do.	Damage mainly to cranberry crop	Do.
Wisconsin Rapids, Wis.	21	P. m.			10,000	do.	do.	Do.
Columbiana County, Ohio	23	12.30 p. m.	100	1	30,250	Tornado	Damage principally to property; small crop loss. Three persons injured.	Do.
Clyde (south of) to Huron, Ohio.	23	4-5 p. m.			100,000	do.	Many buildings destroyed or damaged; a number of hogs and cattle killed; hundreds of trees blown down.	Do.
Pittsburgh, Pa. (north of)	23					Wind and rain	Trees uprooted; no other damage reported.	Do.
Sandersburg, Ky. (near)	24					Heavy hail	Late corn and tobacco damaged over a narrow strip.	Do.
Washington County, Md. (east part of)	25	P. m.				Thundergust	Some trees uprooted, others damaged; a frame building and shed unroofed; chimneys blown over.	Do.
Chinook, Wash.	27	6 a. m.			500	Probably tornado	A shed damaged; trees and fences blown down	Do.
Utica, S. Dak. (5 miles east of)	30	7.30 p. m.				Wind	Damage on two farms	Press, Dakotan (Yankton, S. Dak.)
Canton, S. Dak. (south of)	30	9 p. m.				Probably tornado	Farm buildings wrecked; hogs killed.	Do.
Lake Okoboji region, Iowa	30	P. m.				do.	Many cottages and a tabernacle demolished	Do.
Pueblo, Colo.	30					High wind	Fruit industry suffered considerably	Official, U. S. Weather Bureau.

STORMS AND WEATHER WARNINGS

551.515 (73)

WASHINGTON FORECAST DISTRICT

This month will long be remembered, not only because of the great hurricane that passed west-northwestward over extreme southern Florida on the 18th, but because of the fact that for the first time, so far as is known, four tropical cyclones—three of hurricane intensity—were in existence at the same time (September 14-16) west of longitude 50° W. However, during the latter half of September, 1893, there were four hurricanes in progress simultaneously over the North Atlantic Ocean between longitudes 28° and 76° W. (See Fig. 66, MONTHLY WEATHER REVIEW Supplement No. 24).

During the period September 5-8 there was a gradual decrease in pressure and a consequent lessening of the trade winds at the stations in the Lesser Antilles, and during the 8th and 9th the wind changed from east to gentle northwest or west at several of these stations. By the morning of the 10th the wind had turned to southerly at San Juan, St. Thomas, and Turks Island, and it was quite evident that a disturbance of tropical origin was advancing northwestward between Porto Rico and Bermuda. This disturbance moved very slowly and it was a week later (September 17) that it recurved to the northeast over the ocean after its center reached a point about 250 miles east of the Virginia Capes. The first winds of hurricane force were reported by the steamship *Calliope* in latitude 29° 20' N., longitude 67° 20' W., on the 13th. On the 14th the steamship *Mayaro* steamed through the hurricane center for about 40 miles in about latitude 32° N., and longitude 69° W., barometer 28.78 inches. At 6 p. m. of the 16th the steamship *Fort George*, in latitude 36° 30' N., longitude 69° 10' W., reported a barometer reading of 29.04 inches and a wind of force 12, Beaufort Scale, from the southwest. After recurring,

this storm moved rapidly east-northeastward, its center passing about 300 miles south of Sable Island on the 18th. Advisory warnings were issued in connection with this storm daily, and for a few days twice daily. At 12 noon of the 15th northeast storm warnings were ordered displayed from Cape Hatteras to the Virginia Capes, and at 10 p. m. of the same date north of the Virginia Capes to Nantucket, Mass. The next morning the warnings were extended northward to Eastport, Me. Because of the sharp recurve of the storm center toward the east-northeast, the only winds of verifying velocity at coast stations were 42 miles an hour from the northeast at Nantucket, and 50 miles from the same direction at Highland Light.

During the 12th, another tropical disturbance of hurricane intensity was central almost directly east of Bermuda in longitude 56°, moving northeastward.

At 8 a. m. of the 12th the wind at Swan Island was from the south and vessel reports showed a wind circulation around a center a short distance north of Swan Island, and an advisory warning to that effect was issued at 10.15 a. m. The disturbance, still of slight intensity, passed northeastward over west-central Cuba the evening of the 13th. After leaving Cuba there was a considerable increase in intensity, as shown by the a. m. report of the 15th from Nassau, Bahamas, which showed a barometer reading of 29.64 inches and a wind velocity of 42 miles an hour from the northeast. The northeastward progress of the disturbance was blocked about this time and it was forced toward the west. It passed through the Florida Straits the night of the 16th-17th and dissipated the next day over the extreme southeastern Gulf of Mexico.

A more or less complete history of the great Florida hurricane of September 18-20, together with the warnings issued in connection therewith, will be published in the October, 1926, issue of the REVIEW.—C. L. Mitchell.

CHICAGO FORECAST DISTRICT

Two outstanding features marked the month's weather: Unprecedented amounts of rain over large areas, principally in the southern half, and a cool wave that caused either the lowest or near the lowest temperatures of record for so early in the season, over most of the district. The heavy rains caused floods in many sections, while frosts damaged late crops. The bulk of the staple crops had matured, however, so that general production was relatively little affected by frost.

Frost warnings for some northwestern sections were issued on the 8th, 9th, 11th, 12th, 13th, and from the 16th to the 21st, inclusive. The cool wave already mentioned was notable for so early in the season. On the night of the 24th-25th heavy-to-killing frost occurred southward and eastward across northern Kansas, most of Iowa, and western Wisconsin, while on the succeeding night it extended across most of Michigan and the northern portions of Illinois and Indiana. Thus, either heavy or killing frost visited the whole district at this time, except southern Kansas, central and southern Missouri, southern Illinois, and extreme southern Indiana. As a result of the widespread dissemination of warnings, in which radio broadcasting took a conspicuous part, much seed corn was saved in Iowa.

No severe storms visited the Great Lakes, but conditions called for either small-craft or storm warnings on a number of occasions. The most general storm warnings were issued on the 8th, 21st, and 23d. In most cases the disturbances lost force as they reached or crossed the Lakes.—*C. A. Donnel.*

NEW ORLEANS FORECAST DISTRICT

No storm occurred on the west Gulf coast except that the southeast portion of Louisiana came under the influence of the left portion of the tropical storm of September 18-21, for which timely warnings were issued.

Small-craft warnings were displayed for increasing northerly winds on the Texas coast on the 25th. Frost warnings were issued on the 25th for the extreme northern portion of the district. Cloudy weather prevented frost, but freezing occurred in the extreme northwest portion of the district.—*I. M. Cline.*

DENVER FORECAST DISTRICT

An unusual number of disturbances moved eastward from the Plateau Region and Arizona, and frequent lows also advanced during the middle and last of the month from the coasts of British Columbia and Washington. Pressures over Alaska and western Canada were generally high during the first 25 days.

As a result of these pressure conditions, cold, stormy weather prevailed in the northern portion of the district. Heavy rains also fell in New Mexico and Arizona on the 25th, 26th, and 27th. A storm that advanced south-eastward from British Columbia and crossed Montana and Wyoming on the 21st and 22d brought snow in Montana on the 22d and 23d and in northern Wyoming on the 23d. This disturbance was followed by an area of decidedly high pressure and severely low temperature. Thermometer readings of 6° F. and 7° F. were observed in western Montana and Yellowstone Park on the 24th, and of 9° to 19° in Wyoming on the morning of the 25th, freezing weather on the 25th extending southward to

southern Utah and extreme southern Colorado. The 24-hour falls in temperature were hardly sufficient to justify cold wave warnings, although warnings of freezing temperatures were issued for northern Montana on the morning of the 22d, Montana and northern and western Wyoming on the 23d, and Utah and Colorado on the 24th, with warning of temperatures decidedly below freezing issued on the 23d for Montana and on the 24th for eastern Colorado.

Numerous frost warnings were issued during the first half of the month, and frequent frost and freezing temperature warnings during the period from the 16th to the 30th. These were generally verified.—*J. M. Sherier.*

SAN FRANCISCO FORECAST DISTRICT

The month of September in the far western States was characterized by frequent and pronounced changes in temperature and generally dry weather, except in the Pacific Northwestern States, where rains occurred on a number of days. No storm of sufficient intensity to require warnings occurred. The notable occurrence during the month was the cold weather of the 24th to 26th in Nevada, Idaho, Washington, and Oregon. This period gave freezing temperature throughout these States, except over the extreme western parts of Washington and Oregon, and required forecasts of frosts and freezing temperatures. At points in eastern Washington and eastern Oregon the lowest September temperatures of record were recorded. Following this cold wave the barometric pressure increased decidedly over the interior, including British Columbia and Alberta, Canada, the winds in the Pacific States became north to east, and the humidity decreased to very low readings. Previous to the occurrence of the low humidity, fire-weather warnings were disseminated throughout Washington, Oregon, and California. The conditions that followed gave a period of very high forest-fire hazard in these States. In California a number of large fires occurred in the Sierra and were not extinguished until rains occurred on the first of October. On the 30th of the month when a radical change in the pressure distribution was taking place over the northeast Pacific Ocean, rain warnings were issued for northern and central California for the benefit of those who had fruit sundrying on trays. The rains on October 1 were general over northern California, but, due to the rain warnings, damage to drying fruit was negligible.—*E. H. Bowie.*

627.41 (73) RIVERS AND FLOODS

By R. E. SPENCER

Besides rises of varying importance in the middle Mississippi and several other streams of the Middle West, disastrous floods occurred during September in the Neosho, Floyd, Illinois, and Wabash Rivers, and the Grand River of Missouri. Of these latter the first two will be discussed in this report, and those in the Illinois, Wabash, and Grand, the first two of which persisted with pronounced damage into October, will be reported on in full in the October number of this REVIEW.

Rains at least partially contributory to the September floods (except those of northwest Iowa) began falling in the second week of August, so that the ground was already saturated when the heavy falls of early September set in. These continued generally from the 1st to the 6th, and moderate to excessive falls occurred on the 8th and 9th, the 12th to the 16th, the 19th and 20th, and following the